

REMARKS

Claims 1-15 are pending in the present Application. Claim 1 has been canceled, claims 2-8, 10-13 and 15 have been amended, and claims 16-23 have been added, leaving claims 2-23 for consideration upon entry of the present Amendment.

Claim 2, 4-8 have been amended to depend directly or indirectly from newly added claim 16.

Claim 3 has been amended to better define the invention and to delete the term “oder” from the claim.

Claims 12 and 13 have been amended as suggested by the Examiner.

Claims 16-23 have been added to better define the invention. Antecedent basis for claim 16 can be found at least at page 3, lines 23-26; page 9, lines 4-7; and throughout the specification.

Antecedent basis for claim 17 can be found at least at page 9, lines 8-10, and throughout the specification.

Antecedent basis for claim 18 can be found at least at page 2, lines 7-8, and throughout the specification.

Antecedent basis for claim 19 can be found at least at page 2, lines 9-13, and throughout the specification.

Antecedent basis for claim 20 can be found at least at claim 10 as originally filed, page 3, lines 1-3, and throughout the specification.

Antecedent basis for claim 21 can be found at least at claim 11 as originally filed, page 2, lines 18-20, and throughout the specification.

Antecedent basis for claim 22 can be found at least at claim 11 as originally filed, page 2, lines 18-20, and throughout the specification.

Antecedent basis for claim 23 can be found at least at claim 13 as originally filed, page 4, line 24 – page 5, line 5, and throughout the specification.

Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Objections

Claim 3 is objected to because of the following informalities: the German word “oder” is present. (Office Action dated 1/28/2009, page 3) Claim 3 has been amended to delete the term “oder” from the claim.

Claims 12 and 13 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. (Office Action dated 1/28/2009, page 3) Claims 12 and 13 are multiple dependent claims and have been amended to should refer to other claims in the alternative only.

Claim 15 is objected to under 37 CFR 1.75(c) as being a multiple dependent claim that is dependent from another multiple dependent claim. (Office Action dated 1/28/2009, page 3) Claim 15 has been amended to depend from claims 10 or 11.

Applicants believe the amendments to claims 3, 12, 13 and 15 overcome the objections raised on page 2 of the Office Action. Applicants respectfully request withdrawal of the objections and allowance of the claims.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph and 35 U.S.C. § 101

Claims 1-8, and 10-11 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office Action dated 1/28/2009, page 3) In particular, the Examiner stated that although the claim provides for the use of a silica sol, the claim does not set forth any steps involved in the method/process. (Office Action dated 1/28/2009, page 4)

Claims 1-8 are also rejected under 35 U.S.C. § 101 because the claimed recitation of use, without setting forth any steps involved in the process, results in an improper definition of a process. (Office Action dated 1/28/2009, page 4)

As noted above, claim 1 has been canceled. Claims 2-8 have been amended to depend directly or indirectly from newly added claim 16. Claim 16 recites the following process:

16. (New) A process for the production of paper, characterized in that a silica sol containing sulfonic acid groups and/or mercapto groups is added to an aqueous cellulose suspension, and sheet formation, drainage and drying of the sheet are then carried out.

Applicants believe that newly added 16 meets the requirements of 35 U.S.C. § 112, second paragraph, and 35 U.S.C. § 101. Applicant respectfully request withdrawal of the rejections and allowance of the claims.

Claims 3-4 and 10-11 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (Office Action dated 1/28/2009, page 4)

Claim 3 has been amended to recite “B is bivalent, p is 1, **or** B is a linear or branched alkylene group ...” (emphasis added)

Claim 4 has been amended to delete the phrase “in particular 3.”

Claim 10 has been amended to delete the phrase “preferably of 2-20 μ m.”

Claim 11 has been amended to delete the phrase “preferably from 0.1 to 8 mol%, in particular from 1 to 5 mole%.”

Applicants believe that amended claims 3-4 and 10-11 meet the requirements of 35 U.S.C. § 112, second paragraph. Applicant respectfully request withdrawal of the rejections and allowance of the claims.

Claim Rejections Under 35 U.S.C. § 102(b)

Claims 1-4, 6, 10-11, and 14-15 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by US 5,888,290 to Engle et al. (hereinafter “Engle”) (Office Action dated 1/28/2009, page 5) Applicants respectfully traverse this rejection.

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Claim 1 has been cancelled. Independent claim 16 claims a process for the production of paper, comprising adding silica sol containing sulfonic acid groups and/or mercapto groups to aqueous cellulose suspension, and sheet formation, drainage and drying of the sheet are then carried out. Thus, claim 16 refers to the addition of silica sol containing sulfonic acid groups and/or mercapto groups as a process aid during paper production.

Engle is directed to a fluorochemical treatment composition comprising a sol comprising a colloidal dispersion of discrete, monodisperse in size, polymer-grafted inorganic microparticles in a liquid; and at least one fluorochemical. (Abstract) Engle does not teach a process for the production of paper. Therefore, Engle cannot teach a process for the production of paper

comprising adding silica sol containing sulfonic acid groups and/or mercapto groups to an aqueous cellulose suspension, and sheet formation, drainage and drying of the sheet are then carried out, as presently claimed. For this reason, Engle does not teach all elements of claim 16 and cannot anticipate the claim under 35 U.S.C. § 102(b)

Further, Engle refers to a treatment composition imparting water and oil repellency etc. to various substrates (textiles, carpets, paper, etc.) In case of paper treatment, this is a functional treatment of paper, meaning that the treatment gives different functional properties to the paper for certain end uses, e.g., oil-resistant papers and food packaging. This is in contrast to the present invention, where the silica sol used is not giving any functional properties to the paper. Rather, the silica sol is used as a process aid during paper production to increase retention (retention is the “yield” of solid materials in the paper web in %). In addition to improvement of retention, the use of the silica sols according to the invention also improves drainage. Engle does not discuss the production and, consequently, does not use the silica sols or compositions described therein during paper production. Engle is also silent on any effects of the silica sols or compositions described therein on paper retention.

Applicants further note that a silica sol substituted with “3-mercaptopropyltrimethoxysilane”, as addressed in the Office Action on page 6, 1st paragraph, is only described as an intermediate compound in Engle (column 3, lines 17-43). Such substituted silica sols are not a part of the compositions of Engle, nor are there effects in paper production described anywhere in Engle. Rather the silica sol particles that are part of the compositions described by Engle are polymer-grafted, inorganic microparticles (see e.g., claim 1, abstract, abstract or column 1, line 46-49)

Therefore, Applicants believe that the claimed process for the production of paper according to claim 16 and its dependent claims 2-8 are novel and non-obvious over Engle.

Regarding claim 10-12 (and dependent claims 18-20) directed to a silica sol, Applicants respectfully submit that Engle does not teach silica sols containing sulfonic acid groups. For this reason at least, Engle does not teach all elements of claims 10-12. Consequently, the production of the silica sol of claims 10-12 (see claims 13-15) cannot be taught by Engle.

In summary, Applicants assert that Engle does not teach all elements of the claimed invention and therefore does not anticipate the claims under 35 U.S.C. § 102(b). Applicants respectfully request a withdrawal of the rejection and allowance of the claims.

Claims 1, and 7-9 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by US 5,368,833 to Johansson et al. (hereinafter “Johansson”)(Office Action dated 1/28/2009, page 7) Applicants respectfully traverse this rejection.

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Claim 1 has been cancelled. Claim 9 and 16 are each directed to a process for the production of paper, comprising adding silica sol containing sulfonic acid groups and/or mercapto groups (and a cationic polymer: claim 9) to an aqueous cellulose suspension, and sheet formation, drainage and drying of the sheet are then carried out.

Johansson discloses silica sols suitable for use as additives, in combination with cationic polymers in papermaking. (Abstract) Johansson refers to silica sols that are stabilized by modification with aluminum (col. 2, lines 11-16; col. 3, line 66 – col. 4, line 21; abstract). However, Johansson does not disclose silica sols having sulfonic acid groups and/or mercapto groups, as required by the claimed invention. Accordingly, Applicants submit that the silica sols disclosed by Johansson are chemically different to the silica sols recited in claims 9 and 16. The Office Action (page 8, 1st paragraph) cites column 3, line 5 of Johansson, which states, “The acidification is preferably carried out by means of strongly acid cation exchange resins, for example sulfonic acid types.” (col. 3, line 5) This however, **does not refer** to the substitution of the silica sol, but to the type of the ion exchange resin that is used to convert alkaline sodium silicate solution to silicic acid. An ion exchanger exchanges ions. Ion exchange has nothing to do with a substitution of functional groups (such as sulfonic acid groups) in the silica sol that is finally produced. The ion exchange resin of Johansson contains sulfonic acid groups. Ion exchange resins substituted with sulfonic acid groups are commonly used to remove sodium ions from aqueous media and to **exchange the sodium ions against protons**. The sulfonic acid groups always remain attached to the ion exchange resin and are not attached to the silica sols. See Johansson, col. 3, lines 2-3, where it reads “to give **almost sodium free acid sols**” or col. 4, lines 8-11 reading: “*if the sol, before the aluminum modification, contains too high amounts of **sodium** it should be made **free** from a too high excess of this which can be made by ion exchange.*” (emphasis added) See also Example 1A (col. 6 of Johansson) where a cation ion exchange resin was added to silica sol until the pH fell to about 7.5, and the cation exchange was

than filtered off.

In summary, Johansson does not disclose silica sols sulfonic acid groups and/or mercapto groups, and therefore does not teach all elements of independent claims 9 and 16. Since Johansson fails to teach all elements, the reference cannot anticipate the claims under 35 U.S.C. § 102(b). Applicants respectfully request a withdrawal of the rejection and allowance of the claims.

Claim Rejections Under 35 U.S.C. § 103(a)

Claim 5 stands rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Engle. (Office Action dated 1/28/2009, page 9) Applicants respectfully traverse this rejection.

As discussed in detail above, Engle teach does not a process for the production of paper comprising adding silica sol containing sulfonic acid groups and/or mercapto groups to an aqueous cellulose suspension, and sheet formation, drainage and drying of the sheet are then carried out, as presently claimed. For this reason, Engle does not each all elements of claim 16. Claim 5 depends from claim 16 and includes all the limitations thereof. Since Engle does not each all elements of claim 16 (and claim 5) Applicants believe that a *prima facie* case of obviousness has not been made. Applicants respectfully request a withdrawal of the rejection and allowance of the claims.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance are requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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